

REMARKS

The Office Action dated August 10, 2004, has been received and reviewed.

Claims 1-3, 5, and 7-31 remain pending and under consideration in the above-referenced application. Each of claims 1-3, 5, and 7-31 stands rejected.

Reconsideration of the above-referenced application is respectfully requested.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-3, 5, and 7-31 stand rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Kikuchi in View of Hashimoto

Claims 1-3, 5, 7-11, 13-22, 24, 25, and 27-31 have been rejected under 35 U.S.C. § 103(a) for being drawn to subject matter which is allegedly unpatentable over the subject matter taught in Japanese patent publication JP 11-40608 of Kikuchi et al. (hereinafter "Kikuchi"), in view of teachings from U.S. Patent 6,410,366 to Hashimoto et al. (hereinafter "Hashimoto").

Kikuchi, inasmuch as the translation thereof that has been provided by the Office can be understood, teaches semiconductor device assemblies that include support members 6 that are configured to be disposed between a circuit board 5, 10 and another circuit board 2 to which a semiconductor die 1 is secured. Support members 6 may be secured to (*see, e.g.*, paragraph

[0041]) or integrally formed with (*see, e.g.*, paragraphs [0073], [0081], and [0082]) either circuit board 2 or circuit board 5, 10.

The teachings of Kikuchi are limited to support structures 6 that include a single layer of material, such as a glass epoxy resin (*see, e.g.*, paragraphs [0026], [0060], [0086]) or another, material, such as alumina, another ceramic, or the like (*see* paragraphs [0087] and [0088]).

While Kikuchi teaches that an adhesive material may be used to secure support structures 6 to circuit board 2, 5, or 10 (paragraph [0041]), Kikuchi does not teach or suggest that the adhesive material is part of the support structures 6. Kikuchi also lacks any teaching or suggestion as to the characteristics of the adhesive material (*i.e.*, conductive, dielectric, etc.).

The teachings of Hashimoto are directed to semiconductor device components—chip 10 and substrate 20—that include support bumps 11, 21, respectively, protruding from surfaces thereof. According to Hashimoto, the bumps 11, 21 are preferably formed from an electrically insulating material. Col. 5, lines 41-43; col. 7, lines 5-7. When chip 10 and substrate 20 are assembled with one another, corresponding bumps 11 and 21 may align with each other. Col. 5, lines 53-54.

Hashimoto does not teach or suggest that corresponding bumps 11 and 21 adhered or otherwise secured to one another.

Independent claim 1 recites a semiconductor device component that includes a substrate with at least one stabilizer protruding from a surface of the substrate. The at least one stabilizer is positioned between a periphery of the stabilizer-bearing surface of the substrate and each contact pad exposed to that surface. The at least one stabilizer of independent claim 1 includes a plurality of at least partially superimposed, contiguous, mutually adhered layers of *the same type of dielectric material*.

Independent claim 13 is drawn to a semiconductor device component that includes a substrate and at least one stabilizer protruding from a surface of the substrate. The at least one stabilizer includes “a plurality of superimposed, contiguous, *mutually adhered layers*, each of which comprises *the same type of dielectric material*” (emphasis supplied).

Independent claim 25 is directed to a semiconductor device component that includes at least one nonconductive stabilizer. The at least one nonconductive stabilizer of independent

claim 25 includes “a plurality of adjacent, *mutually adhered regions* comprising *the same type of material*.” Again, Kikuchi and Hashimoto, taken either separately or together, do not teach or suggest at least one nonconductive stabilizer with adjacent regions which are mutually adhered to one another and comprise the *same type of material*.

Independent claim 31 recites a semiconductor device component that includes a substrate and at least one stabilizer protruding from a surface of the substrate. The stabilizer includes a plurality of adjacent, mutually adhered regions formed from the *same material*.

It is respectfully submitted that there are several reasons that the teachings of Kikuchi and Hashimoto do not support a *prima facie* case of obviousness against any of claims 1-3, 5, 7-11, 13-22, 24, 25, or 27-31.

First, it is respectfully submitted that one of ordinary skill in the art would have no reason to expect the asserted combination of teachings from Kikuchi and Hashimoto to be successful.

In particular, it is respectfully submitted that one of ordinary skill in the art would have no reason to expect that the teachings of Kikuchi and Hashimoto could reasonably be combined in such a way as to result in at least one stabilizer with a plurality of at least partially superimposed, contiguous, *mutually adhered* layers or regions comprising *the same material* or *the same type of material*. This is because Kikuchi lacks any teaching or suggestion of support members 6 that include multiple layers or regions and, although the teachings of Hashimoto are directed to structures that include support bumps 11 and 21 that, when stacked, form a support for spacing a chip 10 and substrate 20 apart from one another, Hashimoto does not teach or suggest that such stacked bumps 11 and 21 may be adhered, “mutually adhered,” or otherwise secured to one another.

Moreover, while Kikuchi teaches that an adhesive material may be used to secure support members 6 to a circuit board 2, 5, 10, the adhesive material of Kikuchi is not the same material or type of material as the support members 6. Thus, even assuming, *arguendo*, that one of ordinary skill in the art would have been motivated to use the bumps 11 and 21 of Hashimoto and the adhesive of Kikuchi in place of the support members 6 of Kikuchi, the resulting structures would not include multiple layers or regions that are mutually secured to one another and that

comprise the same material or the same type of material. Rather, the layer of adhesive material interposed between bumps 11 and 21 would be formed from a different material and a different type of material than that from which the bumps 11 and 21 are formed.

Therefore, one of ordinary skill in the art would have no reason to expect a combination of teachings from Kikuchi and Hashimoto, as asserted, to successfully result in the subject matter recited in any of independent claims 1, 13, 25, or 31, or claims 2, 3, 5, or 7-11, which depend from claim 1, claims 14-22 or 24, which depend from claim 13, or claims 27-30, which depend from claim 25.

Second, it is respectfully submitted that neither Kikuchi nor Hashimoto, taken either separately or together, teaches or suggests each and every element of any of claims 1-3, 5, 7-11, 13-22, 24, 25, or 27-31.

With respect to independent claim 1, it is respectfully submitted that Kikuchi and Hashimoto, taken individually or collectively, do not teach or suggest a semiconductor device component which includes at least one stabilizer “including a plurality of at least partially superimposed, contiguous, *mutually adhered layers of the same type of dielectric material*” (emphasis supplied).

Kikuchi and Hashimoto also lack any teaching or suggestion of a semiconductor device component that includes at least one stabilizer “comprising a plurality of superimposed, contiguous, *mutually adhered layers*, each of which comprises *the same type of dielectric material*,” as required by independent claim 13.

Independent claim 25 is directed to a semiconductor device component that includes at least one nonconductive stabilizer. The at least one nonconductive stabilizer of independent claim 25 includes “a plurality of adjacent, *mutually adhered regions* comprising *the same type of material*.” Again, Kikuchi and Hashimoto, taken either separately or together, do not teach or suggest at least one nonconductive stabilizer with adjacent regions which are mutually adhered to one another and comprise *the same type of material*.

In addition, Kikuchi and Hashimoto, taken individually or collectively, do not teach or suggest a semiconductor device component that includes at least one stabilizer with “a plurality

of adjacent, *mutually adhered regions* formed from *the same material*” (emphasis supplied), as recited in independent claim 31.

Therefore, Kikuchi and Hashimoto do not teach or suggest each and every element of any of independent claims 1, 13, 25, or 31, or claims 2, 3, 5, or 7-11, which depend from claim 1, claims 14-22 or 24, which depend from claim 13, or claims 27-30, which depend from claim 25.

Third, because one of ordinary skill in the art would have no reason to expect the asserted combination of referenced teachings to be successful, and since Kikuchi and Hashimoto do not teach or suggest each and every element of any of claims 1-3, 5, 7-11, 13-22, 24, 25, and 27-31, it is respectfully submitted that there would have been no motivation for one of ordinary skill in the art to combine the teachings of Kikuchi and Hashimoto in the manner that has been asserted. In fact, based upon the lack of any expectation that the asserted combination would be successful and the teachings and suggestions that are missing from the references, it appears that the only source for such motivation could have been the hindsight provided by the disclosure of the above-referenced application.

In view of the foregoing, it is respectfully submitted that a *prima facie* case of obviousness has not been set forth against any of independent claims 1, 13, 25, or 31. Therefore, it is respectfully submitted that, under 35 U.S.C. § 103(a), each of these claims recite subject matter which is allowable over the teachings of Kikuchi and Hashimoto.

Claims 2, 3, 5, and 7-11 are each allowable, among other reasons, for depending either directly or indirectly from claim 1, which is allowable.

Each of claims 14-22 and 24 is allowable, among other reasons, for depending either directly or indirectly from claim 13, which is allowable.

Claims 27-30 are allowable, among other reasons, for depending either directly or indirectly from claim 25, which is allowable.

Kikuchi, Hashimoto, and Sato

Claims 12 and 23 have been rejected under 35 U.S.C. § 103(a) for being drawn to subject matter which is purportedly unpatentable over teachings from Kikuchi, in view of the subject matter taught in Hashimoto and, further, in view of teachings from U.S. Patent 6,287,895 to Sato.

Claims 12 and 23 are allowable, among other reasons, for respectively depending from claims 1 and 13, which are allowable.

Kikuchi, Hashimoto, and Kuniaki

Claim 26 stands rejected under 35 U.S.C. for reciting subject matter which is assertedly unpatentable over the teachings of Kikuchi, in view of teachings from Hashimoto and, further, in view of the subject matter taught in Japanese patent publication JP 10-189653 of Kuniaki et al. (hereinafter “Kuniaki”).

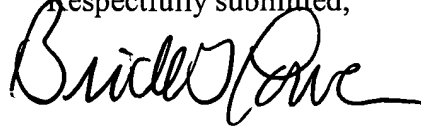
Claim 26 is allowable, among other reasons, for depending directly from claim 25, which is allowable.

For these reasons, it is respectfully requested that the 35 U.S.C. § 103(a) rejections of claims 1-3, 5, and 7-31 be withdrawn.

CONCLUSION

It is respectfully submitted that each of claims 1-3, 5, and 7-31 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brick G. Power", written over the typed name.

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